Acquisition Directorate
Research & Development Center

Report No. CG-D-02-13

Asian Carp Survivability Experiments and Water Transport Surveys in the Illinois River, Volume II

January 2013

Homeland Security

N O T I C E

This document is disseminated under the sponsorship of the Department of Homeland Security in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of this report.

This report does not constitute a standard, specification, or regulation.

Timothy R. Girton
Technical Director
United States Coast Guard
Research & Development Center
1 Chelsea Street
New London, CT 06320

Technical Report Documentation Page

1. Report No. CG-D-02-13	2. Government Accession Number	3. Recipient's Catalog No.
4. Title and Subtitle Asian Carp Survivability Experiments and Water Transport Surveys in the Illinois River, Volume II		5. Report Date January 2013 6. Performing Organization Code Project No. 410143
7. Author(s) D. Heilprin, C. Ehrler, Todd Main, Penny Herring		8. Performing Organization Report No. RDC UDI No. 1381
9. Performing Organization Name and Address U.S. Coast Guard Research and Development Center 1 Chelsea Street New London, CT 06320 SAIC 23 Clara Drive, Suite 206 Mystic, CT 06355-1959 ECORP 3914 Murphy Canyon Rd, Ste A232 San Diego, CA 92123		10. Work Unit No. (TRAIS) 11. Contract or Grant No. Contract HSCG32-10-D-R00021/ Task Order: HSCG32-10-J-R300004 Task Order: HSCG32-11-J-R300016 Task Order: HSCG32-12-J-R300030 Contract HSCG32-11-P-E55003
12. Sponsoring Organization Name and Address United States Environmental Protection Agency Great Lakes National Program Office 77 West Jackson Blvd (G-17J) Chicago, IL 60604-3511		13. Type of Report & Period Covered Final 14. Sponsoring Agency Code United States Environmental Protection Agency Great Lakes National Program Office
15. Supplementary Notes The R&D Center's technical point of contact is Gail E. Roderick, 860-271-2868, email: Gail.E.Roderick@uscg.mil.		

16. Abstract (MAXIMUM 200 WORDS)

This report combines two earlier reports regarding investigations into the potential for barges and towboats to transport Asian carp upstream across the United States Army Corps of Engineers' electronic dispersal barrier and release them on the Lake Michigan side of the barrier. It summarizes a series of experiments conducted during June 2011 to evaluate the potential for Asian carp larvae to be entrained into and survive in barge ballast tanks on the Illinois River. It also describes investigations in 2010 and 2012 to determine the amount of water normally carried in barge ballast tanks.

Experiments were conducted in the LaGrange Reach of the Illinois River. Results indicated few Asian carp larvae were entrained and the majority of entrained fish were non-Asian carp, primarily gizzard shad. Survival of Asian carp larvae in test cages in tanks was high, even when water quality conditions were not favorable (low dissolved oxygen concentrations). A very small percentage (0.56%) of Asian carp survived for 30 minutes after being pumped through either a 2-inch or 3-inch pump. Although long-term survival following pumping was not determined, this extremely low survival rate translates to a minimal risk.

Visual inspections of ballast tanks and voids on 132 barges (empty and loaded) and 14 towboats were completed in the Chicago Sanitary and Ship Canal (CSSC) in August 2010. An additional tank survey was conducted in July 2012 on barges operating locally near the electronic dispersal barriers. Overall, only 5 percent of the more than 1000 tanks surveyed contained a measurable amount of water. Dissolved oxygen (DO) in tanks ranged between 0.44 - 7.80 mg/L. Although the water quality conditions were not optimal and water depth was very shallow, tanks could support early developmental stages of Asian carp.

Volume I of this report contains the descriptions, results, and conclusions from the experiments and surveys as well as a description of barge design and normal operating procedures. Volume II is comprised of the appendices containing a test plan for experiments and field and laboratory data sheets from the original reports.

17. Key Words Asian carp, barge ballast tank, water quality, entrainment, larval survival, LaGrange Reach, Illinois River, water transport	18. Distribution Statement **Distribution Statement A:** Approved for public release; distribution is unlimited.		
19. Security Class (This Report) UNCLAS//Public	20. Security Class (This Page) UNCLAS//Public	21. No of Pages 131	22. Price

(This page intentionally left blank.)

EXECUTIVE SUMMARY

This volume of four appendices supports "Asian Carp Survivability Experiments and Water Transport Surveys in the Illinois River, Volume I". That volume report combines two earlier reports regarding investigations into the potential for barges and towboats to transport Asian carp across the U. S. Army Corps of Engineers electronic dispersal barriers in the Chicago Shipping and Sanitary Canal. The work was reported earlier in the reports "Survivability of Asian Carp in Barge Tanks in the Illinois River" and "Water Transport during Normal Operations of Towboats and Barges in the Illinois River". Due to the size of the individual reports, their large appendices containing a test plan for experiments and field and laboratory data sheets have been combined as "Asian Carp Survivability Experiments and Water Transport Surveys in the Illinois River, Volume II".

Appendix A is the experimental study plan referred to in "Survivability of Asian Carp in Barge Tanks in the Illinois River". The plan was not previously published but was used as the basis for the 2011 survivability experiments.

Appendix B consists of field and laboratory data sheets that were generated during the survivability experiments. These are broken into sub-sets to deal with the different aspects of the experiments and analyses.

Appendix C contains the data sheets from the 2010 survey of ballast tanks of towboats and barges to determine the volume of water carried during normal barge operations. The information was reported in "Water Transport during Normal Operations of Towboats and Barges in the Illinois River".

Appendix D contains data sheets from a similar survey conducted in 2012 of ballast tanks of barges operating locally near the dispersal barriers. The findings from that effort were used to update the original "Water Transport during Normal Operations of Towboats and Barges in the Illinois River" report.

(This page intentionally left blank.)

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS

ARTCO/ADM	American River Transportation Company/Archer Daniels Midland Co.
COTR	Contracting Officer's Technical Representative
CSSC	Chicago Sanitary and Ship Canal
RDC	Research & Development Center
SAIC	Science Applications International Corporation
UMRS	Upper Mississippi River System
USACE	U.S. Army Corps of Engineers
USCG	United States Coast Guard
YSI	Yellow Springs Instrument

(This page intentionally left blank.)

APPENDIX A. TEST PLAN: ENTRAINMENT AND SURVIVAL OF ASIAN CARP IN BARGE BALLAST TANKS ASIAN CARP TRANSPORT BY TOW BOATS AND BARGES

1 INTRODUCTION

The objective of this project is to determine the potential for early life stages of Asian carp to become entrained into and survive in ballast tanks of barges. This project will also test whether barges and towboats can potentially provide a transport mechanism for Asian carp to bypass the U.S. Army Corps of Engineers (USACE) electric dispersal barrier in the Chicago Sanitary and Ship Canal (CSSC). This study will conduct a series of tests to determine if carp eggs, larvae, or small fry can become entrained, transported, and survive in vessel ballast water and bypass the fish barrier.

Science Applications International Corporation (SAIC) has assembled a team of experts to perform this study. The Team includes the following subcontractors: ECORP Consulting, Tenera Environmental, and the University of Illinois (Illinois River Biological Station). Each of these subcontractors has specific expertise for aquatic resources, ichthyoplankton, and/or Asian Carp ecology. See 0 for a list of the study participants.

2 BACKGROUND

Bighead and silver carp (collectively, Asian carp) were intentionally introduced to Arkansas in the early 1970's. Shortly thereafter, they escaped aquacultural confinement and are now distributed throughout waters of the Upper Mississippi River System (UMRS). Asian carp were introduced to improve water quality of aquaculture ponds. These species invaded rivers through pond escapement or by deliberate introductions and were first documented in the UMRS in 1982. Asian carp are voracious planktivores and reproduce rapidly. They may grow up to 4 feet in length and weigh up to 100 pounds. Asian carp are now some of the most abundant fish species in some areas of the Mississippi River. Some scientists suggest that Asian carp could become a dominant species in the Great Lakes.

USACE constructed a permanent electrical barrier to protect Lake Michigan and the Great Lakes from Asian carp that are moving up the Illinois River. The CSSC Dispersal Barrier stretches two arrays of electrodes across the canal (approximately 220 feet apart). The electrodes pulse direct current into the water; this causes fish to turn back rather than pass through the electric current. In June 2010, the Illinois Department of Natural Resources captured one 20-pound live Asian carp in Lake Calumet, which sits near the Illinois-Indiana border and is connected to Lake Michigan's canal system. This fish represented the first physical specimen that has been found above the electric barrier system. No information exists on potential transport mechanisms for other stages of Asian carp, including eggs and larvae.

Reproductive needs of adult bighead and silver carp are similar and have been well documented (DeGrandchamp, et al., 2007 (Reference 1)). Generally, these species require water temperatures of at least 17.8 °C, with an optimum range of 21-26.8 °C. River flow is also important for successful spawning; with water velocities of 0.7 m/s (2.3 fps) or higher needed for productive spawning. The length of unimpeded river required for successful spawning by silver carp may be 100 km or more (Gorbach and Krykhtin 1980 (Reference 2)).

Yi, et. al. (1988, as translated by Duane Chapman 2006 (Reference 3)) have documented the egg and larval stages of grass, black, silver and bighead carps in the Yangtze River. This early paper also reported the development times, but water temperature were not tightly controlled, so it is not certain if the development times they reported are similar to what would be observed in the Illinois River. Chapman (personal communications) stated that they are currently working on growth and development rates at controlled temperatures to better understand the early egg and larval stages of silver and bighead carp. In the Yangtze River, after the eggs are released and fertilized, they undergo development to the larval stage in between about 33-35 hours and then continue larval development. Chapman (personal communications) stated that after about 100-200 hours, the larvae move out of the current and move into generally shallower areas and are then generally found oriented to natural or man-made substrates.

3 TECHNICAL APPROACH

We propose to conduct all experiments in the La Grange Reach of the Illinois River, between La Grange Lock & Dam located south of Beardstown, Illinois, upstream to Peoria Lock & Dam located near Peoria, Illinois (Figure 1). Asian carp spawning has been often observed in this reach over the past 10 years. This stretch of the river likely contains the greatest ambient densities of wild Asian carp in the world (Sass, et al., 2010, Biological Invasions (Reference 4)). Details concerning each experiment are presented below. **Error! Reference source not found.** provides data sheets that will be used during these experiments. We will conduct the following testing first in the river current in an area that has been verified to have Asian carp eggs and larvae based on plankton tows. Soon after the first test has been completed, we will conduct a second test period downriver from the start of the first test in an area hopefully containing eggs and larval individuals. If only one spawning event takes place, it is possible that only larger larval stages will be available for this second test based on information from Chapman. It is also possible that these larger larvae might be difficult to catch with the plankton net due to their behavioral change at about 100-200 hours of life. If they cannot be successfully captured using the plankton nets, but can be caught in and around natural and man-made structures using dip nets, then we will use this technique to collect larvae for the second survival experiments that is scheduled to take place in quieter waters. If spawning continues after the first and second tests, an optional third test could be implemented.

3.1 Technical Approach to Evaluate Leakage Effects via Entrainment Experiments (Task 3.4)

For all tests during this study, American River Transportation Company/Archer Daniels Midland Co. (ARTCO/ADM) under contract to the U.S. Coast Guard (USCG) will furnish a barge modified to simulate leakage into ballast tanks. The SAIC Team will coordinate with the barge operator (ARTCO/ADM) and the Contracting Officer's Technical Representative (COTR)/Workgroup to schedule experiments aboard the barge according to the finalized experimental sampling design. Prior to commencing the entrainment experiments, the Team will verify that the barge is located within an area with early life stages of Asian carp by conducting plankton tows in the potential study area. ARTCO/ADM will then position the barge in this area where Asian carp larvae have been located and we will preserve a representative sample of the collected eggs and larvae from that area.

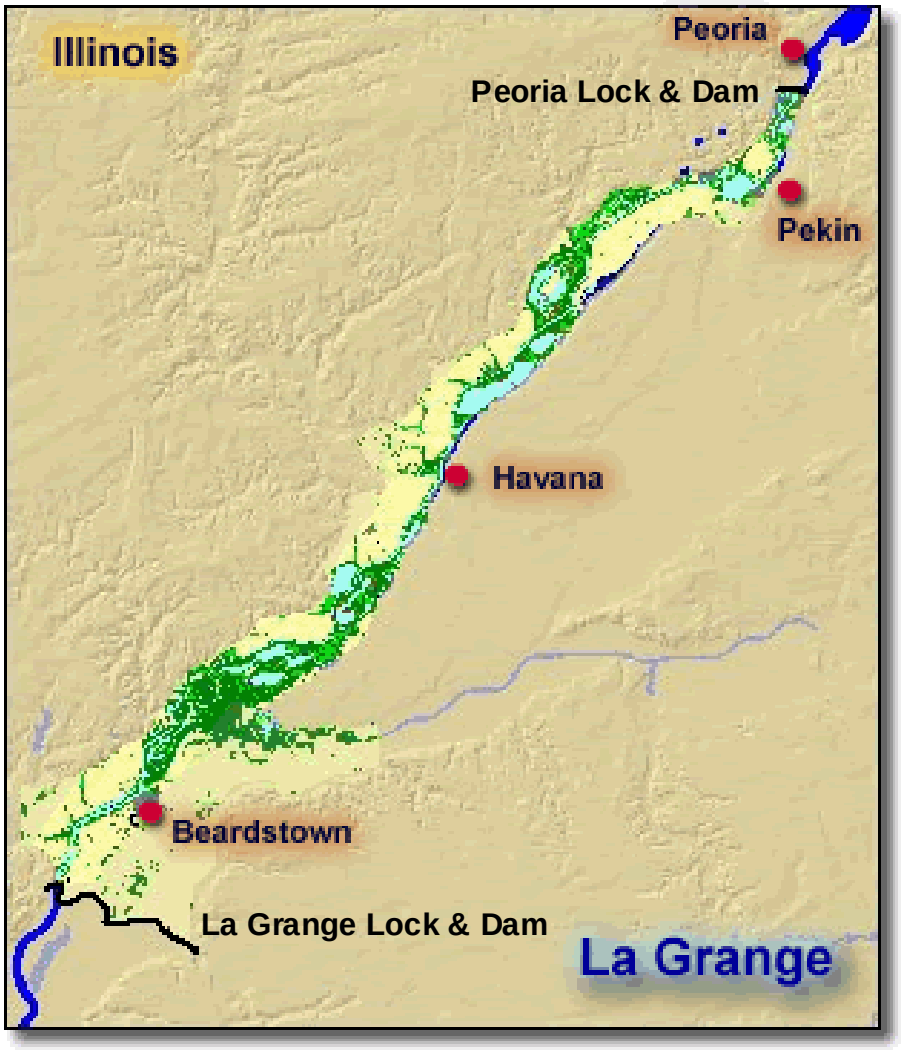

Figure 1. Location of the experiments.

We will conduct plankton tows from a University of Illinois, Illinois River Biological Station research vessel using a 500-micron mesh net deployed at surface water depths. At the conclusion of each tow, we will lift the net from the water and carefully rinse the contents into the cod end (collecting bucket) at the bottom of the net. We will check the collected material for the presence of Asian carp eggs and larvae using a dissecting microscope. When Asian carp eggs and larvae are found, we will mark the location for positioning the test barge. We will preserve a representative sample of the eggs and larvae collected at this location.

The Team will work with ARTCO/ADM to flood four experimental tanks to the depth of approximately 3 feet in the area where Asian carp eggs and larvae were located. At approximately the times defined in the finalized test plan (Table 1), the Team will sequentially pump out the appropriate tank using a 3" water pump. We will adjust this schedule in the field based on the timing of the initial flooding of the tanks. We will filter this pump-out water through a plankton net suspended in the river to help minimize the impact of the eggs and larvae striking the net mesh. We will position the top of the net above the water surface so that water and its contents will be filtered through the net. The Team will immediately analyze each resulting sample following the pump-out to determine the number, life stage, and initial viability of Asian carp eggs

and larvae. We will preserve all viable eggs and larvae in a labeled vial; we will preserve all dead eggs and larvae in a separate labeled vial. We will send all preserved samples to the laboratory at the conclusion of the field testing. The laboratory will record the number of individuals in each life stage number based on the stage numbering system presented by Yi, et al. (1988) (Reference 3).

Table 1. Expected fill and empty times in hours.

Tank #	Fill	Empty	Refill	Empty
1	0	8	12	120
2	0	24	28	132
3	0	48	52	144
4	0	72	76	156

We will record all field-collected data on data sheets (see **Error! Reference source not found.**) and enter the data into an electronic database (Microsoft® Office Access®) for data analyses.

The barge will drift down the river and try to maintain its proximity to the group of larval carp from which the original plankton tows were collected. Prior to re-flooding each tank after pump-out, we will use additional plankton tows during daylight hours to verify that the barge is in the water mass containing Asian carp eggs and larvae. The Team will then empty and re-flood the appropriate tank. We will analyze the eggs and larvae contained in the pumped-out water soon after collection based on the proposed preliminary schedule in Table 2. We will adjust the times in this table in the field based on the actual time of the first flooding of the barge tanks. In addition to larval fish data, the Team will collect water quality data throughout the study in both the experimental tanks and ambient (river) locations. Water quality parameters to be recorded include water depth, water temperature, dissolved oxygen, pH, and ammonia (total and unionized). We will use a Yellow Springs Instrument (YSI) water quality probe to collect all parameters except ammonia, which will be collected using a Turner Fluorometer. We will collect data at a minimum in early morning and late afternoon for the duration of the experiment. We will record all water quality data on separate sequenced data sheets (see **Error! Reference source not found.**).

3.2 Technical Approach to Evaluate Asian Carp Survival in Tanks (Task 3.5)

We will run Asian carp survival experiments concurrently with entrainment experiments (Section 3.1). The barge will already be located in an area confirmed by plankton tows to have Asian carp for the entrainment experiments. After the barge tanks are flooded, the Team will deploy three cages containing a known number of eggs and larvae into each flooded tanks. We will construct the cages from 5-gallon buckets with lids. We will cut openings in the sides and lids and will cover the openings with 500-micron mesh netting held in place by aquarium-grade silicone. We will collect Asian carp eggs and larvae using the same plankton net setup used for Task 3.4, but we will limit the tow length to approximately 2-5 minutes to decrease the time the eggs and larvae are in the net. We are targeting 20 eggs and 30 larvae in each cage but, if fewer individuals are available in the river tows, we will adjust this number.

Table 2. Preliminary proposed sampling schedule for Tasks 3.4 - 3.5.

Note: Times are based on flooding and pump-out each taking 2 hours. Task 3.6 will be conducted after Day 1.

running time (hrs)	day	time	Tank 1	Tank 2	Tank 3	Tank 4	Control A cages	Control B cages
	0	0800	preliminary collection of eggs and larvae and placement into test cages to help determine handling times. Also determine initial location for barge placement					
-3	1	0500	begin egg/larval collections [A]	begin egg/larval collections [A]	begin egg/larval collections [A]	begin egg/larval collections [A]	begin egg/larval collections [A]	begin egg/larval collections [A]
0	1	0800	tank empty, filling begins	tank empty, filling begins	tank empty, filling begins	tank empty, filling begins		
2	1	1000	filling completed	filling completed	filling completed	filling completed	cages w/ larvae suspended in river	cages w/ larvae suspended in river
8	1	1600	begin egg/larval collections [B]				begin egg/larval collections [B]	
10	1	1800	pump out begins (8 hr)				larvae removed (8 hr) and replaced	
12	1	2000	pump out end, filling begins					
14	1	2200	filling completed					
24	2	0800		begin egg/larval collections [C]				begin egg/larval collections [C]
26	2	1000		pump out begins (24 hr)				larvae removed (24 hr) and replaced
28	2	1200		pump out end, filling begins				
30	2	1400		filling completed				
48	3	0800			begin egg/larval collections [D]			
50	3	1000			pump out begins (48 hr)			
52	3	1200			pump out end, filling begins			
54	3	1400			filling completed			
72	4	0800				begin egg/larval collections [E]	begin egg/larval collections [E]	
74	4	1000				pump out begins (72 hr)	larvae removed (72 hr) and replaced	
76	4	1200				pump out end, filling begins		
78	4	1400				filling completed		
98	5	1000	pump out (108 hr)					
120	6	0800						
122	6	1000					larvae removed (48 hr)	larvae removed (96 hr)
134	6	2200		pump out (104 hr)				
146	7	1000			pump out (92 hr)			
158	7	midnight				pump out (80 hr)		

At the conclusion of each tow, we will lift the net from the water and carefully rinse the contents into the cod end. We will transfer the collected material to a holding chamber from which we will remove the Asian carp eggs and larvae and place them in a container of river water that was filtered through 500-micron mesh net. We will place these eggs and larvae in the test cages with three test cages being suspended in each barge tank water soon after they have been flooded. We will record the number of eggs and larvae placed in each numbered cage on a data sheet (**Error! Reference source not found.**). Just prior to the tanks being pumped out, we will remove the three test cages and record the number of live and dead eggs and larvae in each cage. To determine the effects of ballasting operations and residence time on the viability and survival of Asian carp early life stages, we will analyze the eggs and larvae in each cage for number, life stage, and viability. We will remove eggs considered nonviable and any dead larvae, preserve then in labeled vials, and archive for later analysis in the laboratory. We will preserve all live eggs and larvae in a separate labeled vial. Each vial label will contain at a minimum the date, survey, tank number, fill number, and cage number to allow tracking of the results of each test. We also plan to set up two sets (three each) of control cages each containing live eggs and larvae. We will suspend the control cages in the river off the side of the barge. These controls as set up will allow a determination of viability after 8, 24, 48, 72, and 96 hours of being submerged in the river. We will check the larvae in these cages for viability on the schedule presented in Table 2.

The Team will measure the same water quality parameters as collected in the entrainment study above (Section 3.1), including water depth, water temperature, dissolved oxygen, pH, and ammonia. We will record measurements in the ballast tanks and alongside the barge at least twice daily.

3.3 Technical Approach to Evaluate Pump Effects on Asian Carp (Task 3.6)

We will carry out this task in conjunction with both the entrainment (Section 3.1) and survival (Section 3.2) experiments. With the barge in an area known to have Asian carp eggs and larvae (as verified with plankton tows) and with the assistance of ARTCO/ADM, the Team will pump a known volume of river water (at least 100 gallons) with a 3” water pump into a plankton net submerged in the river in the same manner as is conducted for Task 3.4 (Section 3.1). The Team may also use a 2” water pump to for this testing to compare pump effects with the two pump sizes available on the barge. We will analyze samples collected during this task in the field soon after collection to determine viability of the carp life stages and to assess potential effects of pumping on their viability after a single pass through the pump assembly. We will handle these samples using the same methods described above for the entrainment (Section 3.1) and survival (Section 3.2) experiments to verify number of individuals in each life stage number.

Results of all three experiments and the finalized Test Plan will be presented in the Final Report.

4 REFERENCES

1. DeGrandchamp, et al., 2007, Linking Adult Reproduction and Larval Density of Invasive Carp in a Large River.
2. Gorbach and Krykhtin, 1980, Maturation rate of the white amur Ctenopharyngodon idella and silver carp Hypophthalmichthys molitrix in the Amur River, Journal of Ichthyology, 21(4):835–843.
3. Yi, B., Z. Liang, Z. Yu, R. Lin, and M. Hee, 1988, as translated by Duane Chapman 2006, Gezhouba Water Control Project and four famous fishes in Yangtze River, Hubei Science and Technology Press, Wuhan, China.
4. Sass, et al., 2010, Biological Invasions.

Appendix A: Study Participants

Name	Organization	Phone #	Email
Penny Herring	RDC	860 271-2868 **860-961-8826 C**	Penny.R.Herring@uscg.mil
Eric Pickering	USCG District 9	216-902-6050	William.E.Pickering@uscg.mil
Steve Ricard (Program Manager)	SAIC	860 572-2308 **860-460-0963 C**	Steven.A.Ricard@saic.com
Brad Wilson	SAIC	**860-917-4538 C**	kevin.b.wilson@saic.com
Danny Heilprin (Subcontractor PM)	ECORP	858-279-4040, ext 1511 **858-220-8872 C**	dheilprin@ecorpconsulting.com
Chris Ehrler	Tenera	805-541-0310 **805-748-4609 C**	cehrler@tenera.com
Duane Chapman	USGS	573-876-1866 **573-289-0625 C**	dchapman@usgs.gov
Greg Sass	U of Illinois	309-543-6000 **608-354-4061 C**	ggsass@illinois.edu
Phil Moy	UW Seagrant	608-263-5133 **920-901-6699 C**	pmoy@aqua.wisc.edu
Chuck Burlingame	ARTCO/ADM	309-694-5091 **309-231-0901 C**	Charles.Burlingame@adm.com

Appendix B: Data Sheets

Figure A-1 through Figure A-3 show the data sheets for the experiments.

Coast Guard/SAIC Entrainment and Survival of Asian Carp in Ballast Tanks - FILL/EMPTY Datasheet

Survey #: ____________ **Survey Start Date:** ____________ **Sheet #:** ______________

Location: ____

(T1 - T4) **(F1 - F2)** **Tank #:** ________ **Fill # for Tank:** ________ **FILLED** **EMPTIED** **Date:** ________ ________ **Time:** ________ ________ **Water Depth (ft):** ________ **# Hours Filled (Target):** ________ **(Actual):** ________	**(T1 - T4)** **(F1 - F2)** **Tank #:** ________ **Fill # for Tank:** ________ **FILLED** **EMPTIED** **Date:** ________ ________ **Time:** ________ ________ **Water Depth (ft):** ________ **# Hours Filled (Target):** ________ **(Actual):** ________
(T1 - T4) **(F1 - F2)** **Tank #:** ________ **Fill # for Tank:** ________ **FILLED** **EMPTIED** **Date:** ________ ________ **Time:** ________ ________ **Water Depth (ft):** ________ **# Hours Filled (Target):** ________ **(Actual):** ________	**(T1 - T4)** **(F1 - F2)** **Tank #:** ________ **Fill # for Tank:** ________ **FILLED** **EMPTIED** **Date:** ________ ________ **Time:** ________ ________ **Water Depth (ft):** ________ **# Hours Filled (Target):** ________ **(Actual):** ________
(T1 - T4) **(F1 - F2)** **Tank #:** ________ **Fill # for Tank:** ________ **FILLED** **EMPTIED** **Date:** ________ ________ **Time:** ________ ________ **Water Depth (ft):** ________ **# Hours Filled (Target):** ________ **(Actual):** ________	**(T1 - T4)** **(F1 - F2)** **Tank #:** ________ **Fill # for Tank:** ________ **FILLED** **EMPTIED** **Date:** ________ ________ **Time:** ________ ________ **Water Depth (ft):** ________ **# Hours Filled (Target):** ________ **(Actual):** ________
(T1 - T4) **(F1 - F2)** **Tank #:** ________ **Fill # for Tank:** ________ **FILLED** **EMPTIED** **Date:** ________ ________ **Time:** ________ ________ **Water Depth (ft):** ________ **# Hours Filled (Target):** ________ **(Actual):** ________	**(T1 - T4)** **(F1 - F2)** **Tank #:** ________ **Fill # for Tank:** ________ **FILLED** **EMPTIED** **Date:** ________ ________ **Time:** ________ ________ **Water Depth (ft):** ________ **# Hours Filled (Target):** ________ **(Actual):** ________
NOTES	Review By / Date: ________________ Entered By / Date: ________________

Figure A-1. Entrainment Fill/Empty Data Sheet.

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: _____ Survey Start Date: _____ Sheet #: _____

Location: _____

FIELD DATA

Tank # (1-4): _____ Fill # for Tank (1-2): _____

Task: _____ (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:		

LAB DATA

Vial Information			Egg / Larv.	Life Stage #	Cond.		Vial Information			Egg / Larv.	Life Stage #	Cond.	
Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	(E or L)	(1-48)	(A/D)	Count	Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	(E or L)	(1-48)	(A/D)	Count

NOTES

Review By / Date: _____

Entered By / Date: _____

Figure A-2. Field/Lab Data Sheet.

Coast Guard/SAIC Entrainment and Survival of Asian Carp in Ballast Tanks - WATER QUALITY Datasheet **Sheet #:** ______

Survey #: ______ **Survey Start Date:** ______ **Location:** ______

		AM							PM						
			Water				Ammonia			Water				Ammonia	
Site	Date (mm/dd/yy)	Time	Depth (ft)	Temp (°C)	DO	pH	Total	Unionized	Time	Depth (ft)	Temp (°C)	DO	pH	Total	Unionized
T1															
T2															
T3															
T4															
R															
T1															
T2															
T3															
T4															
R															
T1															
T2															
T3															
T4															
R															
T1															
T2															
T3															
T4															
R															

NOTES

Review By / Date: ______

Entered By / Date: ______

Site: T# - Tank #; R - River

Figure A-3. Water Quality Data Sheet.

APPENDIX B. FIELD AND LABORATORY DATA SHEETS FROM 2011 SURVIVABILITY EXPERIMENTS

Appendix B is comprised of field and laboratory data sheets filled out during the experiments and later analyses. Two sets of experiments or trials were conducted on the Illinois River near Pekin, IL during June 2011. The data sheets are grouped according to experiment type.

Appendix B1: Times for Fill and Empty of each Tank during Entrainment and Survival Testing

Appendix B2: Water Quality Measurement Datasheets

Appendix B3: Trial 1. Asian carp entrainment/leakage (Task 3.4) laboratory datasheet

Appendix B4: Trial 1. Asian carp survival (Task 3.5) laboratory datasheets – in tank cages

Appendix B5: Trial 1. Asian carp survival (Task 3.5) laboratory datasheets – control cages

Appendix B6: Trial 2. Asian carp entrainment/leakage (Task 3.4) laboratory datasheets

Appendix B7: Trial 2. Asian carp survival (Task 3.5) laboratory datasheets – in tank cages

Appendix B8: Trial 2. Asian carp survival (Task 3.5) laboratory datasheets – control cages

Appendix B9: Trial 2. Plankton Tow Datasheets during Tank Filling

NOTE: The word "Survey" in the following datasheets is referred to as "Trial" in the report text. Two (2) trials were conducted for the entrainment, survival, and pump effects experiments.

Appendix B1: Times for Fill and Empty of each Tank during Entrainment and Survival Testing

Coast Guard/SAIC Entrainment and Survival of Asian Carp in Ballast Tanks - FILL/EMPTY Datasheet

Survey #: 1 – Run #1 Survey Start Date: 11 June 2011 Sheet #: 1

Location: Pekin Dock

(T1 - T4)	(F1 - F2)		
Tank #: T1	Fill # for Tank: F1		
	FILLED	EMPTIED	
Date:	11 June 11	11/June/11	
Time:	0925	17:30	
Water Depth (ft):	±3 ft. →	51" actual	
# Hours Filled (Target):	8 hrs	(Actual): 8 hr	

(T1 - T4)	(F1 - F2)		
Tank #: T1	Fill # for Tank: F2		
	FILLED	EMPTIED	
Date:	11 June 11	6/17/11	
Time:	9:23 pm	9:30	
Water Depth (ft):	48"		
# Hours Filled (Target):	108	(Actual): 132	

(T1 - T4)	(F1 - F2)		
Tank #: T2	Fill # for Tank: F1		
	FILLED	EMPTIED	
Date:	11 June 11	6/12/11	
Time:	0925	0930	
Water Depth (ft):	3 ft →	54" actual	
# Hours Filled (Target):	24 hrs	(Actual): 24	

(T1 - T4)	(F1 - F2)		
Tank #: T2	Fill # for Tank: F2		
	FILLED	EMPTIED	
Date:	6/12/11	6/17/11	
Time:	12:00 noon	09:15	
Water Depth (ft):	50.5"		
# Hours Filled (Target):	104 hrs	(Actual): 117	

(T1 - T4)	(F1 - F2)		
Tank #: T3	Fill # for Tank: F1		
	FILLED	EMPTIED	
Date:	11 June 11	13 Jun 11	
Time:	0937	0930	
Water Depth (ft):	3 ft →	44"	
# Hours Filled (Target):	48 hrs	(Actual): 48 hrs	

(T1 - T4)	(F1 - F2)		
Tank #: T3	Fill # for Tank: F2		
	FILLED	EMPTIED	
Date:	13 Jun 11	6/17/11	
Time:	12:12	10:45	
Water Depth (ft):	47" actual		
# Hours Filled (Target):	92 hrs	(Actual): 94.5	

(T1 - T4)	(F1 - F2)		
Tank #: T4	Fill # for Tank: F1		
	FILLED	EMPTIED	
Date:	11 June 11	12 June 11	
Time:	0930	0935	
Water Depth (ft):	3 ft →	41" actual	
# Hours Filled (Target):	72 hrs	(Actual): 72 hrs	

(T1 - T4)	(F1 - F2)		
Tank #: T4	Fill # for Tank: F2		
	FILLED	EMPTIED	
Date:	14 JUNE 11	6/17/11	
Time:	11:50 am	11:45	
Water Depth (ft):	48" actual		
# Hours Filled (Target):	80	(Actual): 72	

NOTES

Review By / Date: CQ 6/28/11

Entered By / Date: SH 06-28-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp in Ballast Tanks - FILL/EMPTY Datasheet

Survey #: 2 run #2 Survey Start Date: 6/18/11 Sheet #: 2

Location: Pekin

(T1 - T4)	(F1 - F2)	FILLED	EMPTIED
Tank #: T1	Fill # for Tank: F1		
		Date: 6/18/11	6/24/11
1st cage →		Time: 11:20	11:45
		Water Depth (ft): In 56	
# Hours Filled (Target): 156	(Actual): 144		

(T1 - T4)	(F1 - F2)	FILLED	EMPTIED
Tank #:	Fill # for Tank:		
		Date:	
		Time:	
		Water Depth (ft): In	
# Hours Filled (Target):	(Actual):		

(T1 - T4)	(F1 - F2)	FILLED	EMPTIED
Tank #: T2	Fill # for Tank: F1		
		Date: 6/18/11	6/19/11
1st cage →		Time: 10:35	10:30
		Water Depth (ft): In 59	
# Hours Filled (Target): 24	(Actual): 24		

(T1 - T4)	(F1 - F2)	FILLED	EMPTIED
Tank #: T2	Fill # for Tank: F2		
		Date: 6/19/11	6/24/11
		Time: 13:32	09:45
		Water Depth (ft): In 45	
# Hours Filled (Target):	(Actual): 115		

(T1 - T4)	(F1 - F2)	FILLED	EMPTIED
Tank #: T3	Fill # for Tank: F1		
		Date: 6/18/11	6/20/11
1st cage		Time: 11:00	10:45
		Water Depth (ft): In 48	
# Hours Filled (Target): 48	(Actual): 48		

(T1 - T4)	(F1 - F2)	FILLED	EMPTIED
Tank #: T3	Fill # for Tank: F2		
		Date: 6/20/11	6/24/11
		Time: 13:10	10:00
		Water Depth (ft): In 48	
# Hours Filled (Target):	(Actual): 93		

(T1 - T4)	(F1 - F2)	FILLED	EMPTIED
Tank #: T4	Fill # for Tank: F1		
		Date: 6/18/11	6/21/11
1st cage →		Time: 11:10	10:55
		Water Depth (ft): In 49	
# Hours Filled (Target): 72	(Actual): 72		

(T1 - T4)	(F1 - F2)	FILLED	EMPTIED
Tank #: T4	Fill # for Tank: F2		
		Date: 6/21/11	6/24/11
		Time: 13:00	11:30
		Water Depth (ft): In 48	
# Hours Filled (Target):	(Actual): 70.5		

NOTES

Review By / Date: CE 6/28/11

Entered By / Date: SH 06-28-11

recorder: D. Heilprin (Ecorp)

Coast Guard/SAIC Entrainment and Survival of Asian Carp in Ballast Tanks - WATER QUALITY Datasheet Sheet #: 1

Survey #: 1 – run #1 Survey Start Date: 6/11/11 Location: Pekin, IL (Artco Fleeting)

Appendix B2: Water Quality Measurement Datasheets

Site	Date (mm/dd/yy)	AM Time	AM Water Depth (ft)	AM Water Temp (°C)	AM DO	AM conduct us / pH	AM Ammonia Total	AM Ammonia Unionized	PM Time	PM Water Depth (ft)	PM Water Temp (°C)	PM DO	PM cond us / pH	PM Ammonia Total	PM Ammonia Unionized
T1	06/11/11	0955	5'1"	25.2	6.55	6296		0.25	1725	5'1"	26.8	4.30	637		0.25
T2	06/11/11	0958	54"	24.9	4.53	550		0.25							
T3	06/11/11	1001	44"	25.1	4.01	644		0.25							
T4	06/11/11	1003	41"	25.0	4.62	614		0.25							
R	06/11/11	1010	surface	25.0	4.99	650		0.25	1725	surf	25.6	5.20	662		0.25
T1															
T2	6/12/11	0930	54"	24.2	3.42	576		0.50							
T3															
T4															
R	6/12/11	0930	surface	24.4	5.23	666		0.25							
T1															
T2															
T3	6/13/11	0930	44	24.1	1.87	612		0.50							
T4															
R	6/13/11	0930	surface	23.7	4.90	666		0.25							
T1															
T2															
T3															
T4	6/14/11	0930	41	23.1	2.39	589		0.50							
R	6/14/11	0930	surface	23.1	5.07	644		0.50							

NOTES Ammonia by API Test Kit
Tank #3 had oil sheen

Site: T# - Tank #; R - River

Review By / Date: CE 6/28/11

Entered By / Date: SH 06-28-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp in Ballast Tanks - WATER QUALITY Datasheet **Sheet #:** 2

Survey #: 1 - run #1 **Survey Start Date:** 6/11/11 **Location:** Pekin

Site	Date (mm/dd/yy)	AM Time	AM Water Depth (ft)	AM Water Temp (°C)	AM DO	AM pH	AM Ammonia Total	AM Ammonia Unionized	PM Time	PM Water Depth (ft)	PM Water Temp (°C)	PM DO	PM pH	PM Ammonia Total	PM Ammonia Unionized
T1	06/15/11	0850	PUMP	22.0	5.50	CON. GAS		.25							
T2		0900	TANK 1	22.4	2.74	610		.25							
T3		0903	TANK 2	22.3	2.50	606		.25							
T4		0906	TANK 3	22.3	2.55	628		.25							
R		0908	TANK 4	22.5	2.80	613		.25							
T1	6/17/11	0920	46	23.6	1.62	615		0.25							
T2		0907	50.5	22.5	1.68	604		0.25							
T3		10:48	47	23.4	0.95	637		0.25							
T4		11:40		24.1	1.54	609		0.25							
R		0905	Surface	22.5	5.42	534		0.25							
T1															
T2		END of Run #1													
T3															
T4															
R															
T1															
T2															
T3															
T4															
R															

NOTES * Ammonia = Total Ammonia

Site: T# - Tank #; R - River

Review By / Date:

Entered By / Date: SH 06-28-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp in Ballast Tanks - WATER QUALITY Datasheet **Sheet #:** 3

Survey #: 2 (run #2) **Survey Start Date:** 6/18/11 **Location:** Pekin, IL

Site	Date (mm/dd/yy)	AM Time	Water Depth (ft) In	Water Temp (°C)	DO	cond. pH	Ammonia Total (ppm)	Ammonia Unionized	PM Time	Water Depth (ft)	Water Temp (°C)	DO	pH	Ammonia Total	Ammonia Unionized
T1	06/18/11	10:28	56	22.8	5.51	546	0.50								
T2	06/18/11	10:30	59	22.8	4.70	549	0.50								
T3	06/18/11	10:32	48	22.7	4.87	552	0.50								
T4	06/18/11	10:35	49	22.7	5.31	546	0.25								
R	06/18/11	10:25	surf	22.7	5.42	537	0.50								
T1						pH									
T2	06/19/11	10:30	59	23.2	2.36	7.0	0.50								
T3															
T4															
R	06/19/11	10:15	surf	23.0	5.27	7.2	0.50								
T1						cond:									
T2															
T3	6/20/11	10:45	48	~~23~~.0	3.09	540	0.25								
T4															
R	6/20/11	10:15	surf	23.5	5.51	565	0.25								
T1						pH									
T2															
T3															
T4	6/21/11	10:45	49	24.3	4.14	7.6	0.25								
R	6/21/11	10:30	surf	24.3	5.39	7.6	0.25								

NOTES pH meter faulty on 6/20/11 – measured conductivity
pH measured on 6/21/11 – API pH kit

Site: T# - Tank #; R - River * 7.6 pH value → ≥ 7.6

Review By / Date: CE 6/28/11

Entered By / Date: SH 06-28-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp in Ballast Tanks - WATER QUALITY Datasheet

Sheet #: 4

Survey #: 2   Survey Start Date: 6/18/11   Location: Pekin, IL

Site	Date (mm/dd/yy)	AM Time	AM Water Depth (ft)	AM Water Temp (°C)	AM DO	AM pH	AM Ammonia Total	AM Ammonia Unionized	PM Time	PM Water Depth (ft)	PM Water Temp (°C)	PM DO	PM pH	PM Ammonia Total	PM Ammonia Unionized
T1	06/24/11	1145	56	22.6	1.14	7.6	0.25								
T2	06/24/11	0945	45	22.2	1.23	7.6	0.25								
T3	06/24/11	0955	48	22.4	0.86	7.6	0.25								
T4	06/24/11	11:25	48	22.6	1.15	7.6	0.25								
R	06/24/11	0935	surf	22.4	5.27	7.6	0.50								
T1															
T2															
T3															
T4															
R															
T1															
T2															
T3															
T4															
R															
T1															
T2															
T3															
T4															
R															

NOTES * Note pH of 7.6 → ≥ 7.6

Review By / Date: CC 6/28/11

Entered By / Date: SH 06-28-11

Site: T# - Tank #; R - River

Appendix B3: Trial 1. Asian carp entrainment/leakage (Task 3.4) laboratory datasheets

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.11 Sheet #: 25

Location: PEKIN

FIELD DATA

Tank # (1-4): T1 OP30 full 6-11-11 8Hr pumpout Fill # for Tank (1-2): F1

Task: P1 Pump out [illegible] 6-11-11 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-COMBO

If Ballast or Pump then Volume: Task #: SOAK TIME S1

If Cage then (# Eggs Inserted): (# Larvae Inserted):

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	2	—

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
1	1	PUMP	CLUPEIDS LARVAE	NOT AC	D	2
PUMPOUT OF T1						
3900	NON-AC	L		D	2	

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES
- LARVAE FOUND IN FIRST HALF OF PUMPOUT. (2 LARVAE)
- SECOND ½ OF PUMP OUT HAD LOTS OF RUST IN SUSPENSION (NO LARVAE)
- 2" PUMP USED - TOOK LONG TIME TO PUMP OUT
- BOTH LARVAE WERE GIZZARD SHAD.

Review By / Date: CG 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 43

Location: PEKIN

FIELD DATA

Tank # (1-4): T1 IN 2123 6.11 OUT 0900 - 6/19/11 Fill # for Tank (1-2): F2

Task: P2 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	1	Ø

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
TAG READ P1/F2 (I THINK I MEANT T1/F2)						
		DATED 6.17				
3899	AC	P	L	45	D	1

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

LARGEST AC I HAVE SEEN SO FAR (7-22-11)

NOTES – TO VOUCHER COLLECTION

Review By / Date: @ 8/16/11

Entered By / Date: SH 08-16-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.11 Sheet #: 32

Location: PEKIN

FIELD DATA

Tank # (1-4): T-2 PUMPED 6.12.2011 Fill # for Tank (1-2): F1

Task: PUMP-1 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ Task #: 3-4 24 HR

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	1	Ø

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	NON-AC		L		D	1							

NOTES – LARVAE - WAS GIZZARD SHAD
– 1 FISH HEAD ALSO IN SAMPLE

Review By / Date: CE 8/16/11

Entered By / Date: SA 08-18-11

7/10/15

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-11 Sheet #: 44

Location: PEKIN

FIELD DATA

Tank # (1-4): T2 IN: 1200 6/12/11 OUT: 0900 - 6/17/11 Fill # for Tank (1-2): F2

Task: P2 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	Ø	Ø

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
		Ø											
1413		no fish											

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.11 Sheet #: 66

Location: PEKIN

FIELD DATA

Tank # (1-4): T3 IN 0930 6.11.11 OUT 0930 6/13/11 Fill # for Tank (1-2): F1

Task: Pump-1 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	13	—

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
T3	NON	AC	L		D	13							

NOTES -2 POSS. CYPRIDS but DAMAGED
-8 GIZZARD SHAD

Review By / Date: CE 8/10/11

Entered By / Date: SM 08-10-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.11 Sheet #: 45

Location: PEKIN

FIELD DATA

Tank # (1-4): T3 IN: 1212 6/13/11 OUT: 1045 6/14/11 Fill # for Tank (1-2): F2

Task: P2 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	1	0

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3100	NON-AC		L		D	1							

NOTES NEW HOUSE. PUT IN VOUCHER TO ID' BAG

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6/1/11 Sheet #: 39

Location: PEKIN

FIELD DATA

Tank # (1-4): T4 In 0930 6.1.11 Fill # for Tank (1-2): F1

Task: PUMP -1 at 0930 6.1.11 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____ LOTS OF POST INGESTION TODEAD ALL DEAD

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	14	18

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
—		DAMAGED	AC?		D	7							
1456		DAMAGED	NOT AC		D	7 = (14)							
3306		FRAG	L		D	3							
3899		AC	L	41	D	1							

NOTES

Review By / Date: CE 6/16/11

Entered By / Date: SH 08-16-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6/14/11 Sheet #: 46

Location: PEKIN

FIELD DATA

Tank # (1-4): T4 Fill # for Tank (1-2): F2

Task: P2 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	1	Ø

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	NON-AC		L		D	1							

NOTES: APPEARS TO BE DAMAGED CYPRINID BUT LOW POSTHAW MYOTOME COUNT
- 12MM TL

Review By / Date: [illegible] 8/16/11

Entered By / Date: SH 08-18-11

Appendix B4: Trial 1. Asian carp survival (Task 3.5) laboratory datasheets – in tank cages

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 5

Location: PEKIN

FIELD DATA

Tank # (1-4): T1 0930-1730 6-11-2011 Fill # for Tank (1-2): F1

Task: B-10 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-CONTROL

If Ballast or Pump then Volume: _____ Task #: _____ SOAK TIME _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): 15 + 15 SMALL LARGE

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	5	29

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
	CHRYSOMELIDAE		L		D	1
	CYPRINID - NOT AC		L		D	37
	AC		L	42	D	1
	CHRYSOMELIDAE		L		A	13
	CYPRINID				A	1
	AC			42	A	12
	AC			43	A	2
	CYPRINID ?				A	1

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		NON-AC	L		D	4
3899		AC	L	42	D	1
3900		NON-AC	L	—	A	15
3899		AC	L	42	A	12
3899		AC	L	43	A	2

NOTES *-2 DAMAGED THAT MADE ID DIFFICULT - BOSS. AC but LARGER POSSIBLY STAGE 41 ALSO FOR 1 OF THEM.
1 ALIVE SPOT TAIL TO VOUCHER

Review By / Date: CE 8/16/11

Entered By / Date: ST 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6/11/2011 Sheet #: 4

Location: PEKIN

FIELD DATA

Tank # (1-4): T1 0930-1730 6.11.11 Fill # for Tank (1-2): F1

Task: B-13 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT- CONTROL

If Ballast or Pump then Volume: Task #: SOAK TIME

If Cage then (# Eggs Inserted): (# Larvae Inserted): 16+2+16 SMALL SMALL LARGE

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	1	30 ✓

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
T1	F1	B13				
3899	AC		L	42	D	1
3900	NON-AC		L		A	19
3899	AC		L	41	A	2
1	AC		L	42	A	9

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

* - DAMAGED AT OUT - but HAS FLEXED. BLADDER DAMAGED

- SOME ALIVE FISH TO VOUCHER

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-16-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 3

Location: PEKIN

FIELD DATA

Tank # (1-4): T1 0930-1730 6.11.11 Fill # for Tank (1-2): F1

Task: B-16 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT - CONTROL SOAK TIME

If Ballast or Pump then Volume: Task #:

If Cage then (# Eggs Inserted): Ø (# Larvae Inserted): 30

	DEAD	ALIVE	DEAD	ALIVE
Number of EGGS:			Number of LARVAE: Ø	32

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
T1	F1	B16				
	CATOSTOMIDAE		L		A	11
	AC		L	42	A	13
	AC		L	41	A	1
	UNKNOWN - SMASHED		L	?	A	2
—	CYPRINUS B				A	3
—	CYPRINUS C				A	2
	NON-AC				A	18

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3899		AC	L	42	A	13
1		AC	L	41	A	1
3900		NONAC	L		A	18

NOTES * DRAINED PUTTING INTO VIAL
CYPRINUS B - CAUDAL COUNT MYOS. NO VENTRAL FINFOLD PIG
BODY LOOKS CURVED ~ 110-115 mm

CYPRINUS C - MYO 26279 - PIG SIMILAR TO AC
VENTRAL OUTGROWTH, NO VENTRAL FINFOLD PIGMENT

Review By / Date: CE 8/16/11

Entered By / Date: SH 03-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 22

Location: PEKIN

FIELD DATA

Tank # (1-4): T1 IN: 2125 (925m) 6-11-11 (10 Hour) Fill # for Tank (1-2): F2

OUT: 0920 6/17/11

Task: B-6 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) (T-TOXICITY)

If Ballast or Pump then Volume: Task #: SOAK TIME

If Cage then (# Eggs Inserted): (# Larvae Inserted): 30

6-16-2011 - 0910 - 11 ALIVE

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	2	26

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		NONAC	L	—	A	15
3899		AC	L	42	A	3
1		AC	L	43	A	8
3900		NONAC	L	—	D	2

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: 8/16/11

Entered By / Date: DH 09-16-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.2011 Sheet #: 23

Location: PEKIN

FIELD DATA

Tank # (1-4): T1 IN-2125 6.11.2011 (1084125) Fill # for Tank (1-2): F2

Task: B-13 OUT 0920 6/11/11 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-CONTROL

If Ballast or Pump then Volume: _____ Task #: _____ SOAK TIME ___

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): 30

6.16.11 0910 (MOST ALIVE)

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	2	19/21

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
			— 1 AC LOST —			ALIVE
3900		NON-AC	L		A	8
3899		AC	L	42	A	4
3899		AC	L	43	A	8
1		AC		?	A	1
3900		NONAC	L	—	D	2

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6/1/2011 Sheet #: 24

Location: PEKIN

FIELD DATA

Tank # (1-4): T1 YU: 2125 (6/16/2011) (1084+2) Fill # for Tank (1-2): F2

Task: B-16 out 0920 6/17/11 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-control

If Ballast or Pump then Volume: _____ Task #: _____ SOAK TIME

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): 30

6/16/2011 · 0910 All alive

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	3	27 28

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		NON-AC		—	A	16
3899		AC		41	A	3
1		AC		43	A	9
3900		NON AC		—	D	2
3899		AC		42	D	1

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-16-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 1

Location: PIKEN

FIELD DATA

Tank # (1-4): T2 DU: 0930 6.11.2011 Out: 0920 6-12-2011 24 hour Fill # for Tank (1-2): F1

Task: B-7 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT - Control Soak time 24

If Ballast or Pump then Volume: #7 Task #:

If Cage then (# Eggs Inserted): 0 (# Larvae Inserted): 30

	DEAD	ALIVE		DEAD / lost???	ALIVE
Number of EGGS:			Number of LARVAE:	6	23

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	Non	AC	L	—	A	23
1	Non	AC	L	—	D	6

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: 8/16/11

Entered By / Date: SH 09-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6/11/2011 Sheet #: 9

Location: IEXW

FIELD DATA

Tank # (1-4): T2 IN: 0930 6/11/11 OUT: 0920 6-12-11 24hour Fill # for Tank (1-2): F1

Task: B-18 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT- control

If Ballast or Pump then Volume: _____ Task #: 3,4 SOAK TIME 24

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): 30

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	2	28

LAB DATA

Vial Information Tank Code (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	F1	B-18	L	NAC	A	17
3899		AC	L	AC-41	A	1
			L	AC-42	A	4
			L	AC-43	A	4
			L	AC-44	A	2
3900		NonAC	L	NonAC	D	2

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08/18/11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 6

Location: PEKIN

FIELD DATA

Tank # (1-4): T2 IN 0930 6-11-2011 OUT 0920 6-12-2011 24 HOUR Fill # for Tank (1-2): F1

Task: B-17 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT- CONTROL

If Ballast or Pump then Volume: _____ Task #: _____ SOAK TIME 24

If Cage then (# Eggs Inserted): Ø (# Larvae Inserted): 31 (ASST. SIZES)

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	1	30

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	Non	AC	L	—	D	1							
3899	AC		L	41	A	1							
1	AC		L	42	A	8							
2	AC		L	43	A	4							
3900	Non	AC	L	—	A	17							

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-14-11 Sheet #: 26

Location: PEKIN

FIELD DATA

Tank # (1-4): T2 IN: 1200 6-12-2011 OUT: 0900 6-17-2011 Fill # for Tank (1-2): F2

Task: B-17 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: 104 HOURS Task #:

If Cage then (# Eggs Inserted): 6 (# Larvae Inserted): 30 (10) = 20mm (20) = 10mm

6/16 - 0915 - 6.16. 0915 3 dead, rest alive

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	34	~~22~~ 23

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		NON AC		–	A	14
3871		AC		42	A	3
1		AC		43	A	5
1456		DAMAGED		–	A[2]	1
3900	NON-AC			—	D	3
1456	DAMAGED			–	D	1

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES 2 LIVE FISH NOT SWIMMING WELL ?: IN ALIVE VIAL BUT in very bad shape } moved TO DEAD
1 DEAD BEHIND MESH
Inner label says: T2/F1/B17 (ALIVE 6-17)
T2/F1/B17 (Dead 6-17)

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-16-11 Sheet #: 27

Location: PEKIN

FIELD DATA

Tank # (1-4): T2 IN: 1200 6.12.2011 OUT: 0900 6/17/11 Fill # for Tank (1-2): F2

Task: B-18 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ 104 Hours Task #: _____

If Cage then (# Eggs Inserted): ø (# Larvae Inserted): 30 (10) ~ 20mm (20) ~ 10mm

6.16.11-0915 - counted dead, most dead

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	5	20

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		Non-AC		—	A	5
3899		AC		42	A	2
1		AC		43	A	13
1456		Dismissed		—	D	1
3900		Non-AC		—	D	4

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-12-11 Sheet #: 28

Location: PEKIN

FIELD DATA

Tank # (1-4): T2 IN : 1200 6/12/2011 OUT : 0900 6/13/11 Fill # for Tank (1-2): F2

Task: B-21 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: 10H Hour Task #:

If Cage then (# Eggs Inserted): Ø (# Larvae Inserted): 30 (10) ~ 20mm (20) ~ 10mm

6-16-11 0915 1 DEAD, REST ALIVE

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	Ø	25

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		NONAC		–	A	9
3899		AC		42	A	1
1		AC		43	A	15

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CR 8/16/11

Entered By / Date: SA 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6/11/2011 Sheet #: 14

Location: PEKIN

FIELD DATA

Tank # (1-4): T3 IN 0930 6/11/11 48 HOUR OUT 0930 6/13/2011 Fill # for Tank (1-2): F1

Task: B-3 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-CONTROL TANK TANK

If Ballast or Pump then Volume: _____ Task #: _____ 48

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

ANSW SUBMITTED LOOSE ON 1 PANEL

	DEAD	ALIVE	DEAD	ALIVE
Number of EGGS:			Number of LARVAE: 4	21

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	NON-AC		L		A	14							
3899	AC		L	40	A	1							
"	AC		L	41	A	1							
"	AC		L	42	A	3							
"	AC		L	43	A	2							
3900	NON-AC		L		D	2							
3899	AC		L	42	D	2							

NOTES - SOME NON-AC PULLED FOR DNA ID
- AC #40 TO VOUCHER

Review By / Date: CE 8/16/11

Entered By / Date: GT 08/18/11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 15

Location: PEKIN

FIELD DATA

Tank # (1-4): T3 IN 0930 6/11 48 Hour Fill # for Tank (1-2): F1

Task: B-9 OUT: 0930 6/13/2011 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CF-CONTROL

If Ballast or Pump then Volume: Task #: SOAK TIME 48

If Cage then (# Eggs Inserted): (# Larvae Inserted):

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	5	23

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	NON-AC		L	—	D	5
3899	AC		L	41	A	2
1	AC		L	42	A	4
1	AC		L	43	A	5
3900	NON-AC (2 TANK)		L	—	A	12

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES: Some non-AC pulled for hybrid

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-08-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 8

Location: PEKIN

FIELD DATA

Tank # (1-4): T3 IN: 0930 - 6-11-11 OUT: 0930-6-13-11 48 Hours Fill # for Tank (1-2): F1

Task: B-11 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-control

If Ballast or Pump then Volume: _____ Task #: _____ SOAK TIME 48

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): 32

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	6	26

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	NON	-AC	L		A	14							
3899	AC		L	42	A	6							
1	AC		L	43	A	6							
3900	NON	-AC	L		D	6							

NOTES - SOME NON AC PULLED for histology
- AC STAGE 43 TO VOUCHER

Review By / Date: CR 8/16/11

Entered By / Date: SH 08-18-11

3.9.11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.13.2011 Sheet #: 33

Location: PEKIN

FIELD DATA

Tank # (1-4): T3 IN: 1212 6.13.2011 OUT: 1030 6/17-2011 92HR EXPOSURE Fill # for Tank (1-2): F2

Task: B-4 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ PULL FRIDAY 6/17 Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	20	7

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
1456		DAMAGED		–	D	10
3900		NON-AC		–	D	10
3900		NON-AC		–	A	3
3877		AC		43	A	4

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: 8/16/11

Entered By / Date: SHSB 8-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-13-2011 Sheet #: 35

Location: PEKIN

FIELD DATA

Tank # (1-4): T3 IN: 1212 6-13-2011 OUT 1030 6/17/11 (92Hr EXPOSURE) Fill # for Tank (1-2): F2

Task: B-11 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	1	23

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3899		AC	L	43	A	11
3900		NON-AC	L	—	A	10
3899		AC	L	44	A	2
3900		NON-AC	L	—	D	1

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-13-2011 Sheet #: 34

Location: PEKIN

FIELD DATA

Tank # (1-4): T3 4D: 1212 OCT. 1013 613-2011 6-17-2011 (92 hr exposure) Fill # for Tank (1-2): F2

Task: B-19 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: ______ Task #: ______

If Cage then (# Eggs Inserted): ______ (# Larvae Inserted): ______

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	7	19

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3899		AC	L	43	A	12							
|		AC	L	44	A	2							
|		AC-damaged	L	? (43/43)	A	1							
3900		NON AC	L	—	A	3							
1456		damaged	L	—	A	1							
3900		NON-AC	L	—	D	7							

NOTES

Review By / Date: CQ 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6/11/2011 Sheet #: 17

Location: PEKIN

FIELD DATA

Tank # (1-4): T4 IN: 0930 6/11/11 OUT 0930 6/14/11 72 HOURS Fill # for Tank (1-2): F1

Task: B1 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-CONTROL

If Ballast or Pump then Volume: _____ Task #: _____ SOAK TIME _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	12	19

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
T4	F1	B1	L	42	A	1
"	"	"	"	43	A	10
NON-AC					A	2
	CYTOSTOMIDAE				A	6
T4	F1	B1	L	43	D	1
	NON AC DAMAGED				D	1
	CYTOSTOMIDAE ?				D1	10

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3899		AC	L	42	A	1
1		AC	L	43	A	10
3900		NON-AC	L		A	8
3899		AC		43	D	1
3900		NON-AC		—	D	10
4456		3 DAMAGED		—	D	1

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.2011 Sheet #: 18

Location: PEKIN

FIELD DATA

Tank # (1-4): T4 ON 0930 6.11.11 OFF 0930 6.14.11 72 HOURS Fill # for Tank (1-2): F1

Task: B-2 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) C-CONTROL

If Ballast or Pump then Volume: _____ Task #: _____ SOAK TIME _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE	DEAD	ALIVE
Number of EGGS:			Number of LARVAE: 4	29 30

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
T4	F1	P1	L	1	A	12
		AC	L	42	A	2
		1	L	43	A	12
UNID CYPRINIDS					A	3
	CHIRONOMIDAE			(2 VIALS)	A	13
		NON AC			D	4

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3899		AC	L	42	A	2
1		1	L	43	A	12
3900		NON AC	L	-	A	16
3900		NON AC	L	-	D	4

NOTES: DEAD AC MUTILATED SO CANNOT STAGE

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6/11/2011 Sheet #: 16

Location: PEKIN

FIELD DATA

Tank # (1-4): T4 IN: 0930 6-11-11 72 HOURS Fill # for Tank (1-2): F1

OUT 0930 6-14-11

Task: B-B (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-CONTROL

If Ballast or Pump then Volume: _____ Task #: _____ SOAK TIME ____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	8	72

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
T4	F1	B-B	L	42	A	2
T4	F1	BB	L	43	A	10
	NON-AC				A	2
	CYPERMETHRIN				A	8
	NON-AC	L	—		D	8

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3899		AC	L	42	A	2
1		AC	L	43	A	10
3900		NON AC	L	—	A	10
3900		NON-AC	L		D	8

NOTES

Review By / Date: CP 8/10/11

Entered By / Date: SH 08-16-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-11 Sheet #: 41

Location: PEKIN

FIELD DATA

Tank # (1-4): T4 IN: 1150 6/14/2011 Pump-Fill Fill # for Tank (1-2): F2

Task: B-2 OUT: 1130 6/17/11 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: Task #:

If Cage then (# Eggs Inserted): (# Larvae Inserted): 30

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	2	28

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		Non-AC	L	—	A	1
3899		AC	L	43	A	24
1		AC	L	44	A	3
3899		Non-AC	L	—	D	2

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SA 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.11 Sheet #: 40

Location: PEKIN

FIELD DATA

Tank # (1-4): T4 IN: 1150 6/14/11 Pull Fill Fill # for Tank (1-2): F2
OUT 1130 6/17/11

Task: B-5 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: Task #:

If Cage then (# Eggs Inserted): (# Larvae Inserted): 30

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	8	21

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		NON AC	L	–	A	1
3899		AC	L	41	A	1
"		"	L	42	A	2
"		"	L	43	A	11
"		"	L	44	A	5
3900		NON AC	L	–	D	1
1456		DAMAGED	L	–	D	7

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CR 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-11 Sheet #: 42

Location: PEKIN

FIELD DATA

Tank # (1-4): T4 IN: 1150 6/14/11 OUT 1130 6/17/11 FULL TNK Fill # for Tank (1-2): F2

Task: B-8 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): 30

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	2	20

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3899		AC	L	42	A	3							
1		AC	L	43	A	11							
1		AC	L	44	A	6							
14560		Damaged	L	—	D	2							

NOTES

Review By / Date: C 8/16/11

Entered By / Date: SH 8-18-11

Appendix B5: Trial 1. Asian carp survival (Task 3.5) laboratory datasheets – control cages

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.2011 Sheet #: 2

Location: PEKIN

FIELD DATA

Tank # (1-4): CONTROL-8 8 HOUR CONTROL Fill # for Tank (1-2): F1

Task: ~~B~~ - CT-12 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-CONTROL

If Ballast or Pump then Volume: #12 Task #: SOAK TIME 8 0930 1730

If Cage then (# Eggs Inserted): 0 (# Larvae Inserted): 30

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	7	25

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3899	AC		L	42	A	1
3900	NON-	AC	L		A	24
3900	NON-	AC	L		D	7

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 10

Location: PEKIN

FIELD DATA

Tank # (1-4): Control-8 8 HOUR CONTROL Fill # for Tank (1-2): F1

Task: CT-15 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-control

If Ballast or Pump then Volume: Task #: Soak time 8

If Cage then (# Eggs Inserted): (# Larvae Inserted): 0930 ~~1930~~ 1730

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	7	21

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	NON-AC		L	—	A	13
3899	AC		L	41	A	4
L	AC		L	42	A	3
L	AC		L	43	A	1
3900	NONAC		L	—	D	7

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B. P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: DH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 7

Location: PEKIN

FIELD DATA

Tank # (1-4): CONTROL-8 8 HOUR Fill # for Tank (1-2): F1

Task: CT-19 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-CONTROL

If Ballast or Pump then Volume: Task #: SOAK TIME 8 0930 1730

If Cage then (# Eggs Inserted): (# Larvae Inserted): 31

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	8	22

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	NON	AC	L	—	A	10
3899	AC		L	41	A	6
1	AC		L	42	A	6
3899	AC		L	42	D	2
3900	NON-	AC	L	—	D	6

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CQ 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 12

Location: PEKIN

FIELD DATA

Tank # (1-4): Control-24 24Hour 30: 0930 6/11/11 Out 11:00 6/12/11 Fill # for Tank (1-2): —

Task: CT-4 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-Control

If Ballast or Pump then Volume: _____ Task #: 3.5 Soak Time 24

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): 30 Note: Hole in mesh-fish likely escaped

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	5	13

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900 Cole	Not	AC	L	—	A	12
3899	AC		L	41	A	1
3900	Not	AC	L	—	D	5

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: 8/08-18/11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 13

Location: PEKIN

FIELD DATA

Tank # (1-4): Control-24 IN 0930 6-11-11 OUT 0926 6-12-11 24 HOUR Fill # for Tank (1-2): —

Task: CT-20 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-Control

If Ballast or Pump then Volume: _____ Task #: _____ SOAK TIME 24

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	5	14 ✓

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3899	AC		L	42	A	1
3900	Not	AC	L	—	A	13
1	Not	AC	L	—	D	5

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CC 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-11-2011 Sheet #: 11

Location: PEKIN

FIELD DATA

Tank # (1-4): CONTROL-24 24 HOUR ON 0930 - 6-11-11 OFF 1040 6-12-11 Fill # for Tank (1-2): —

Task: CT-21 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-CONTROL

If Ballast or Pump then Volume: _____ Task #: _____ SOAK TIME _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): 30

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	6 (9 insect larvae have been observed or lost??)	15

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3700	Not	AC	L	—	A	15
1	Not	AC	L	—	D	6

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES ~15 insect larvae also in vial.

Review By / Date: CE 8/16/11

Entered By / Date: ST 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.2011 Sheet #: 20

Location: PEKIN (65 HOURS)

FIELD DATA

Tank # (1-4): CONTROL (65 hr) 1830 6-11-11 | OUT 6-14-11 1130 72-7=65 72HR CONTROL Fill # for Tank (1-2):

Task: CT-14 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) G-CAGE 1

If Ballast or Pump then Volume: PULL 1830 TUES 6-14-2011 Task #: SOAK TIME

If Cage then (# Eggs Inserted): (# Larvae Inserted): 30

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	0	19 20

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3899	AC		L	42	A	1
1	AC		L	43	A	3
3900	NOT AC		L	—	A	16

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CG 8/16/11

Entered By / Date: SH 8/18/11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.2011 Sheet #: 21

Location: PEKIN 65 Hours

FIELD DATA

Tank # (1-4): CONTROL (65) (3) 1830 - 6-11-11 OUT 6.14.11 1130 T21 F CONTROL Fill # for Tank (1-2): _____

Task: CT-22 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) CT-CONTROL

PULL 1030 THURS 6.14.2011 SOAK TIME = _____

If Ballast or Pump then Volume: _____ Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): 30

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	2	27

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
1C						
3819		AC	L	42	D	1
1		AC	L	43	D	1
3819		AC	L	42	A	4
1		AC	L	43	A	8
3900		NON-AC	L	—	A	15

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.16.11 Sheet #: 38

Location: PEKIN

FIELD DATA

Tank # (1-4): CONTROL (72) IN: 1000 6.14.11 OUT: 1000 6.19.11 48 HRS ON TRUCKS Fill # for Tank (1-2): #2

Task: C-3 (B - Ballast Tank Water; ~~P# - Pump RUN Number [1 or 2]~~; C# - Cage Number [1-21])

If Ballast or Pump then Volume: 72 HOUR Task #: 3.4

If Cage then (# Eggs Inserted): (# Larvae Inserted): 6.16.11 0910 - AT LEAST 2 ALIVE

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	1	23

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	Not	AC		—	D	1
3900	Not	AC		—	A	3
3899	AC			43	A	19
1	AC			44	A	1

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08-18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.11 Sheet #: 36

Location: PEKIN

FIELD DATA

Tank # (1-4): CONTROL (72) IN 1000 6.14.11 OUT 1000 6/17/11 (CONTROL A) Fill # for Tank (1-2): F2

Task: C-12 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: (72 HOUR) Task #: 3.4

If Cage then (# Eggs Inserted): (# Larvae Inserted): 6-16-11 0930 - AT LEAST A FEW ALIVE

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	4	22

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	Not	AC	L	—	A	4
3899	AC		L	42	A	2
1	AC		L	43	A	13
1	AC			44	A	3
3900		NONAC	L	—	D	4

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CG 8/16/11

Entered By / Date: BH 08/18-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.11.11 Sheet #: 37

Location: PEKIN

FIELD DATA

Tank # (1-4): CONTROL (72) IN: 1000 6.14.11 OUT: 1000 6.17.11 Fill # for Tank (1-2): F2

Task: C-20 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: 72 HOUR Task #: 3.4

If Cage then (# Eggs Inserted): (# Larvae Inserted):

6.16.11 - MOST SWIMMING

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	5	14

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	Not AC			—	D	5
3900	Not AC			-	A	5
3899	AC			42	A	2
1	AC			43	A	6
1	AC			44	A	1

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08/18/11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-12-2011 Sheet #: 29

Location: PEKIN

FIELD DATA

Tank # (1-4): CONTROL (118) IN: 1200 6-12-2011 OUT: 0945 6-17-2011 (Control B) Fill # for Tank (1-2): F2

Task: CT7 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ 96 Hours THURSDAY NOON (6-16-2011) Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

6-16-11 - 0930 - mostly alive

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	1	27

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		NON-AC	L	–	D	1
3100		NON-AC	L	–	A	12
3699		AC	L	42	A	6
1		1	L	43	A	9

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 08/18/11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6-12-2011 Sheet #: 30

Location: PEKIN

FIELD DATA

Tank # (1-4): CONTROL (#18) IN: 1200 6/12/2011 OUT: 0945 6/13/11 Fill # for Tank (1-2): F2

Task: G-10 (B - Ballast Tank Water; P#- Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: Task #:

If Cage then (# Eggs Inserted): (# Larvae Inserted):

96 HOURS THUR NOON 6.16.2011

Retrieve west

6.16.2011 - 0930 - MOSTLY ALIVE

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	3	21

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3099	AC		L	43	A	10
3099	AC		L	44	A	1
3100	Not	AC	L	—	A	10
3100	WAS	AC	L	—	D	3

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES 1 WINDOW NOT STUCK DOWN WELL

Review By / Date: CB 6/18/11

Entered By / Date: SH 08-15-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 1 Survey Start Date: 6.12.2011 Sheet #: 31

Location: PEKIN

FIELD DATA

Tank # (1-4): CONTROL (118) IN: 1200 6.12.2011 OUT: 0945 6/17/2011 Fill # for Tank (1-2): F2

Task: CT-15 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ 96 HRS THINGS NOON (6-16-2011) Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

6-16-11 0930 - MOSTLY ALIVE

POOR VIABILITY

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	3	26

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900	No+	AC	L	—	A	13
3899	AC		L	42	A	1
3899	AC		L	43	A	12
3900		NONAC	L	—	D	3

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: CE 6/10/11

Entered By / Date: SH 08/8/11

Appendix B6: Trial 2. Asian carp entrainment/leakage (Task 3.4) laboratory datasheets

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 2 Survey Start Date: 6-18-11 Sheet #: 73

Location: PERU

FIELD DATA

Tank # (1-4): T1 FILLED 6/18/2011 6/24/11 Fill # for Tank (1-2): F1

Task: P1 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21]) ONLY 1 FILL ON T1

If Ballast or Pump then Volume: Task #:

If Cage then (# Eggs Inserted): (# Larvae Inserted):

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:	Ø	Ø	Number of LARVAE:	1	Ø

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		NON AC	L	–	D	1							

NOTES

Review By / Date: @ 6/16/11

Entered By / Date: SH 08/17/11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 2 Survey Start Date: 6/18/2011 Sheet #: 70

Location: PEKIN

FIELD DATA

Tank # (1-4): T2 PUMP OUT 1030 6/19/2011 24 HOUR EXPOSURE Fill # for Tank (1-2): F1

Task: P1 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: Task #:

If Cage then (# Eggs Inserted): (# Larvae Inserted):

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	2(1 w/o HEAD)	

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
1456		MUTILATED	J		D	1							
3900		NON-AC	L		D	1							

NOTES NONAC IS GIZZARD SHAD

Review By / Date: CE 8/10/11

Entered By / Date: BH 08-16-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 2 Survey Start Date: 6/18/11 Sheet #: 74

Location: PEKIN

FIELD DATA

Tank # (1-4): T2 IN OUT 0945 6/24/11 Fill # for Tank (1-2): F2

Task: P2 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	Ø	Ø

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
		Ø											
1413		NO LARVAE											

NOTES

Review By / Date: CE 8/16/11

Entered By / Date: SH 09-17-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 2 Survey Start Date: 16.18.2011 Sheet #: 71

Location: PEKIN

FIELD DATA

Tank # (1-4): T3 PUMP OUT: 1100 6/20/2011 IN 1100 6/18/2011 Fill # for Tank (1-2): 1

Task: P1 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: Task #:

If Cage then (# Eggs Inserted): (# Larvae Inserted):

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	5	0

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count	Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		NON-AC	L		D	5							

NOTES

Review By / Date: 08/16/11

Entered By / Date: SH 08-17-11

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 2 Survey Start Date: 6/18/2011 Sheet #: 75

Location: PEKIN

FIELD DATA

Tank # (1-4): T3 IN OUT 1000 6/24/11 Fill # for Tank (1-2): F2

Task: P2 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: _____ Task #: _____

If Cage then (# Eggs Inserted): _____ (# Larvae Inserted): _____

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	0	0

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
		0				
1413		NO LARVAE				

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES

Review By / Date: 8/16/11

Entered By / Date: SHOB-17-11

River Mile 150-155

Coast Guard/SAIC Entrainment and Survival of Asian Carp Survival - FIELD/LAB Datasheet

Survey #: 2 Survey Start Date: 6.18.2011 Sheet #: 72

Location: PEKIN

FIELD DATA

Tank # (1-4): T4 FILLED: 1 6/18/2011 OUT: 1100 6/21/11 Fill # for Tank (1-2): F1

Task: P1 (B - Ballast Tank Water; P# - Pump RUN Number [1 or 2]; C# - Cage Number [1-21])

If Ballast or Pump then Volume: Task #:

If Cage then (# Eggs Inserted): (# Larvae Inserted):

	DEAD	ALIVE		DEAD	ALIVE
Number of EGGS:			Number of LARVAE:	3 LARVAE #2/2-3 4 TOTAL FISH	Ø

LAB DATA

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count
3900		NON AC	L		D	2
1456		MUTILATED	J		D	1
3899		AC	L	44	D	1

Vial Information Tank (T1-T4)	Fill (F1-F2)	Task (B, P#, C#)	Egg / Larv. (E or L)	Life Stage # (1-48)	Cond. (A/D)	Count

NOTES NON-AC TO VOUCHER

Review By / Date: 8/16/11

Entered By / Date: SH 08/17/11